Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listings of Claims:

29. (Currently amended) A power MOSFET comprising:

a substrate of a first conductivity type;

an epitaxial layer on said substrate, said epitaxial layer generally being of a second conductivity type opposite to said first conductivity type, a trench being formed in said epitaxial layer, a bottom of said trench being located in said epitaxial layer;

an insulating layer lining said ~~a~~ bottom and a sidewall of said trench;

a conductive gate in said trench;

a source region adjacent a surface of said epitaxial layer; and

a drain-drift region of said first conductivity type extending through said epitaxial layer from said ~~a~~ bottom of said trench to said substrate, said drain-drift region forming a PN junction with a portion of said epitaxial layer of said second conductivity type, wherein said drain-drift region comprises a vertical stack of overlapping implanted regions.

30. (Original) The power MOSFET of Claim 29 wherein at least 75% of a cross-sectional area of said drain-drift region is located directly below said trench.

31. (Original) The power MOSFET of Claim 30 wherein at least 90% of a cross-sectional area of said drain-drift region is located directly below said trench.

32. (Original) The power MOSFET of Claim 29 wherein said PN junction intersects a sidewall of said trench.

33. (Currently amended) The power MOSFET of Claim 29 wherein a side edge of each of said implanted regions ~~said PN junction~~ is concave ~~in the~~ towards an interior portion of said drain-drift region.

34. (Currently amended) The power MOSFET of Claim 29 wherein said implanted regions are ~~drain-drift region comprises a plurality of implants~~ made at different energies.

SILICON VALLEY
'ATENT GROUP LLP
50 Mission College Blvd
Suite 360
Santa Clara, CA 95054
(408) 982-8200
FAX (408) 982-8210

35. (Original) The power MOSFET of Claim 29 wherein said epitaxial layer comprises two sublayers having different doping concentrations.

36. (Original) The power MOSFET of Claim 29 comprising a body region of said second conductivity type in said epitaxial layer.

37. (Original) The power MOSFET of Claim 36 wherein a lower border of said body region is at a level below a bottom of said trench.

38. (Original) The power MOSFET of Claim 37 wherein said body region extends to said substrate.

39. (Currently amended) A power MOSFET comprising:

a substrate of a first conductivity type;

an epitaxial layer on said substrate, said epitaxial layer generally being of a second conductivity type opposite to said first conductivity type, a trench being formed in ~~extending from a surface of~~ said epitaxial layer, a bottom of said trench being located in ~~through~~ said epitaxial layer ~~and into said substrate~~;

an insulating layer lining said ~~a~~ bottom and a sidewall of said trench;

a conductive gate in said trench; ~~and~~

a source region of said first conductivity type adjacent said surface of said epitaxial layer and said ~~a~~ sidewall of said trench; and

a drain-drift region of said first conductivity type in said epitaxial layer, said drain drift region extending from said bottom of said trench to said substrate and forming a PN junction with a portion of said epitaxial layer of said second conductivity type, wherein a doping concentration in a vertical cross-section of said drain-drift region starting at said bottom of said trench increases monotonically with increasing distance below said bottom of said trench over the entire distance to said substrate.

40. (New) The power MOSFET of Claim 29 wherein said drain-drift region comprises at least three of said overlapping implanted regions.

SILICON VALLEY
PATENT GROUP LLP

50 Mission College Blvd
Suite 360
Santa Clara, CA 95054
(408) 982-8200
FAX (408) 982-8210